

# **Energy Efficiency Programs in Region 6**

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# What Are NAAQS?

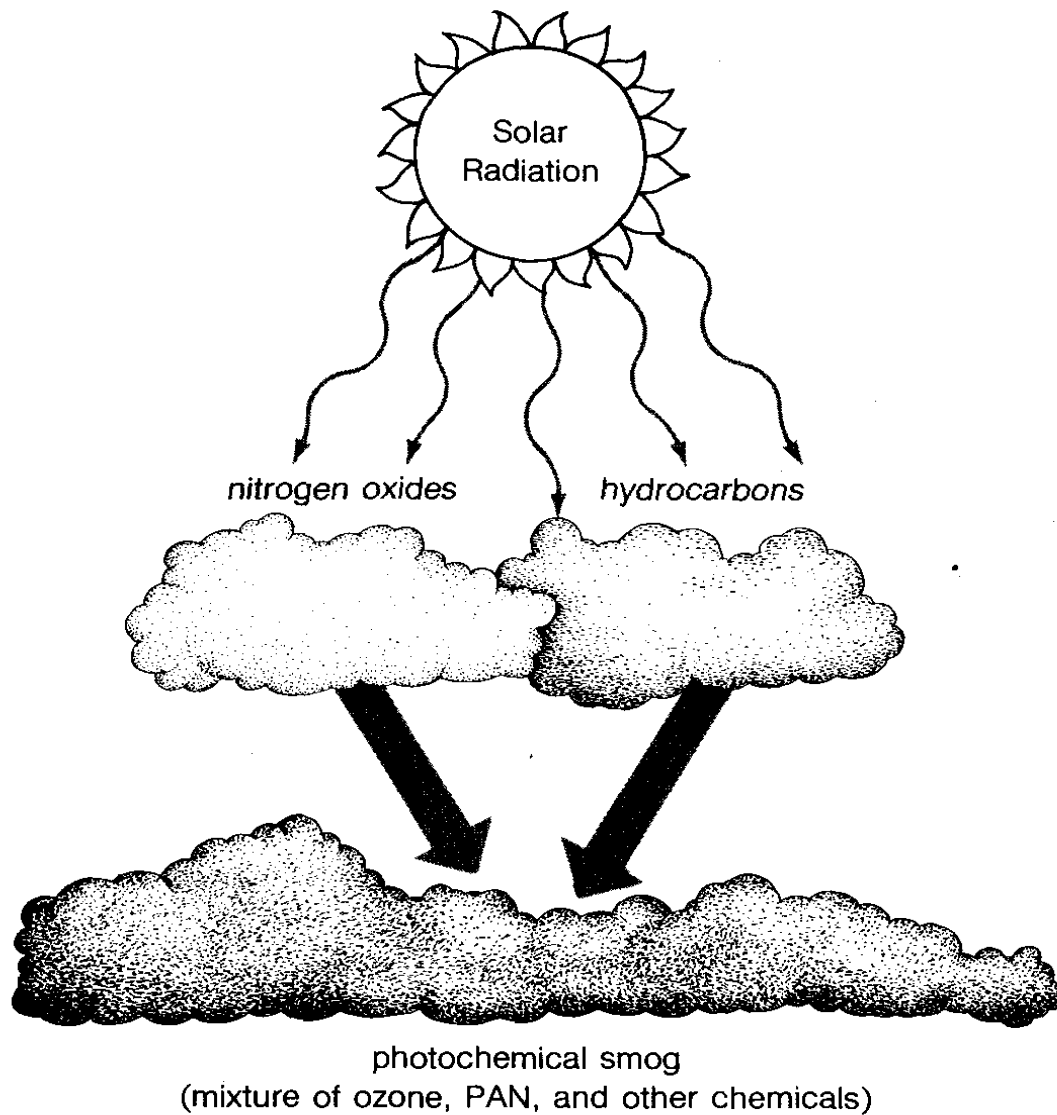
- Title I of CAA directs EPA to establish National Ambient Air Quality Standards (NAAQS) for commonly occurring air pollutants posing public health threats.
- NAAQS set national levels for acceptable concentrations of specific pollutants in outdoor air.
- These are known as “criteria pollutants.”

# The Existing NAAQS

- EPA has set NAAQS for 6 criteria pollutants:
- Ground-level ozone (smog)
  - Particulate matter (PM)
  - Lead
  - Nitrogen dioxide (NO<sub>2</sub>)
  - Sulfur dioxide (SO<sub>2</sub>)
  - Carbon monoxide (CO)

# Health and Environmental Impacts of NO<sub>x</sub>

- Ground-level Ozone (Smog)
- Particle formation
- Acid Rain
- Global Warming
- Visibility Impairment
- Toxic Chemicals
- Water Quality Deterioration



**Figure 17-4** Photochemical smog occurs when nitrogen oxides and hydrocarbons react chemically under the influence of sunlight.



## Ozone-Related Health Effects of Concern

- ▶ Difficulty in breathing, shortness of breath
- ▶ Aggravated/prolonged coughing and chest pain
- ▶ Increased aggravation of asthma, susceptibility to respiratory infection resulting in increased hospital admissions and emergency room visits
- ▶ Repeated exposures could result in chronic inflammation and irreversible structural changes in the lungs, that can lead to premature aging of the lungs and illness such as bronchitis and emphysema
- ▶ Growing evidence suggests association with premature death

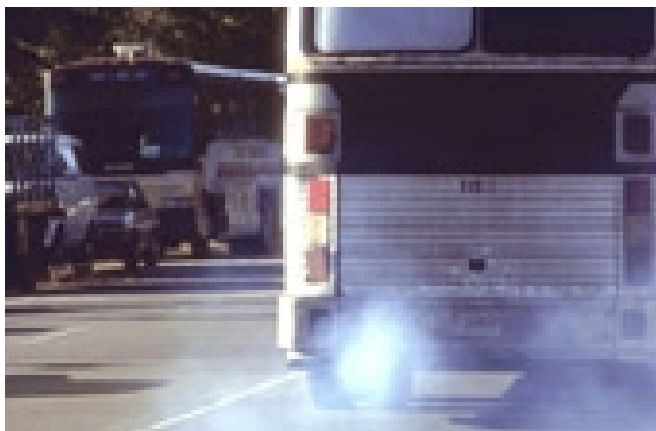
# Environmental Effects of Ozone

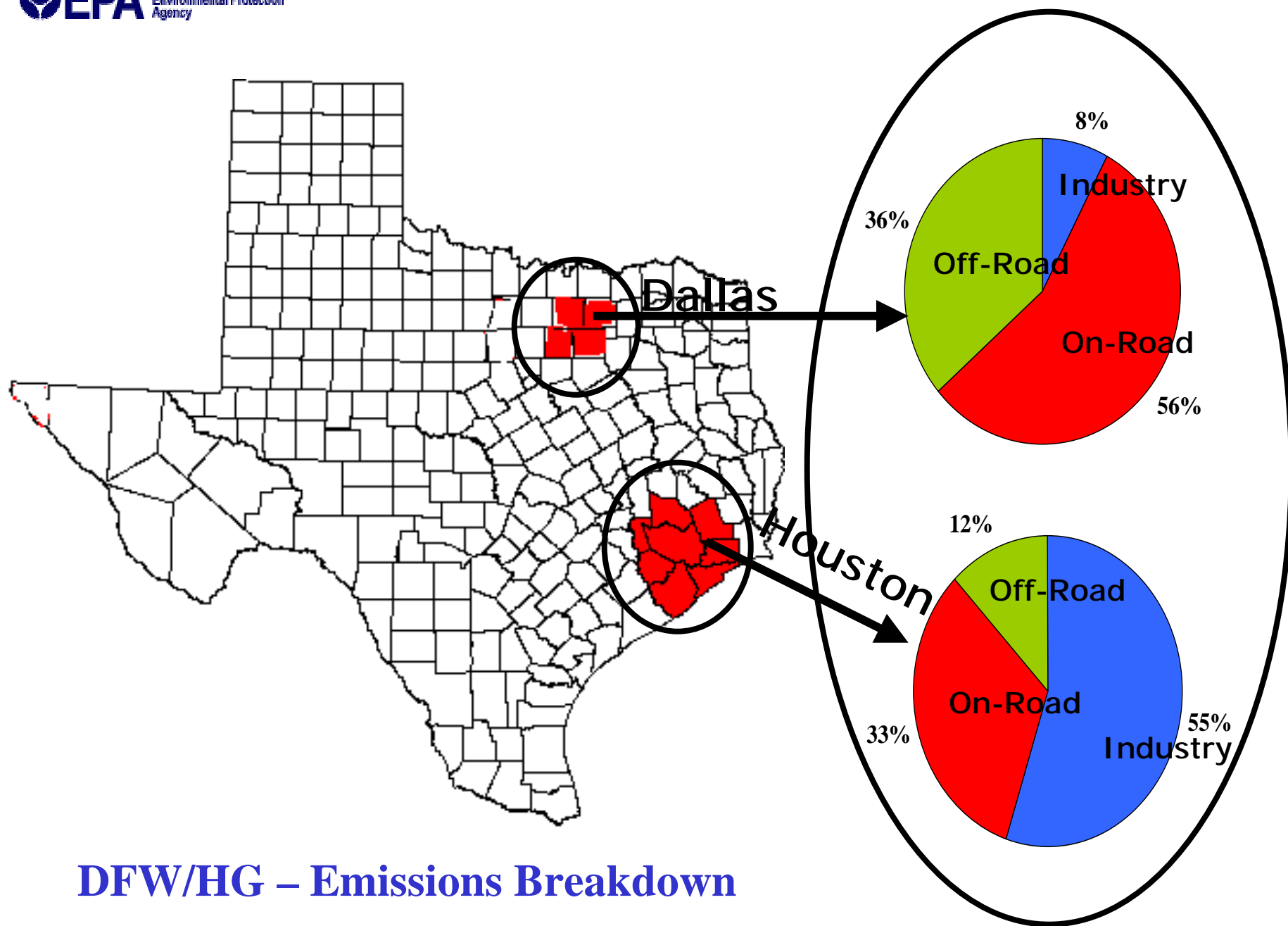
- Reduces agricultural yields for many economically important crops.
- Reduces visibility in many parts of the U.S.
- Causes soiling and damage to materials.
- Adversely affects forests, plant life and ecosystems.

# Major Contributors to Ozone

- Sources of NO<sub>x</sub> and VOCs
  - Motor Vehicles
  - Power Plants
  - Factories
  - Consumer and Commercial Products
  - Fuel Combustion Processes

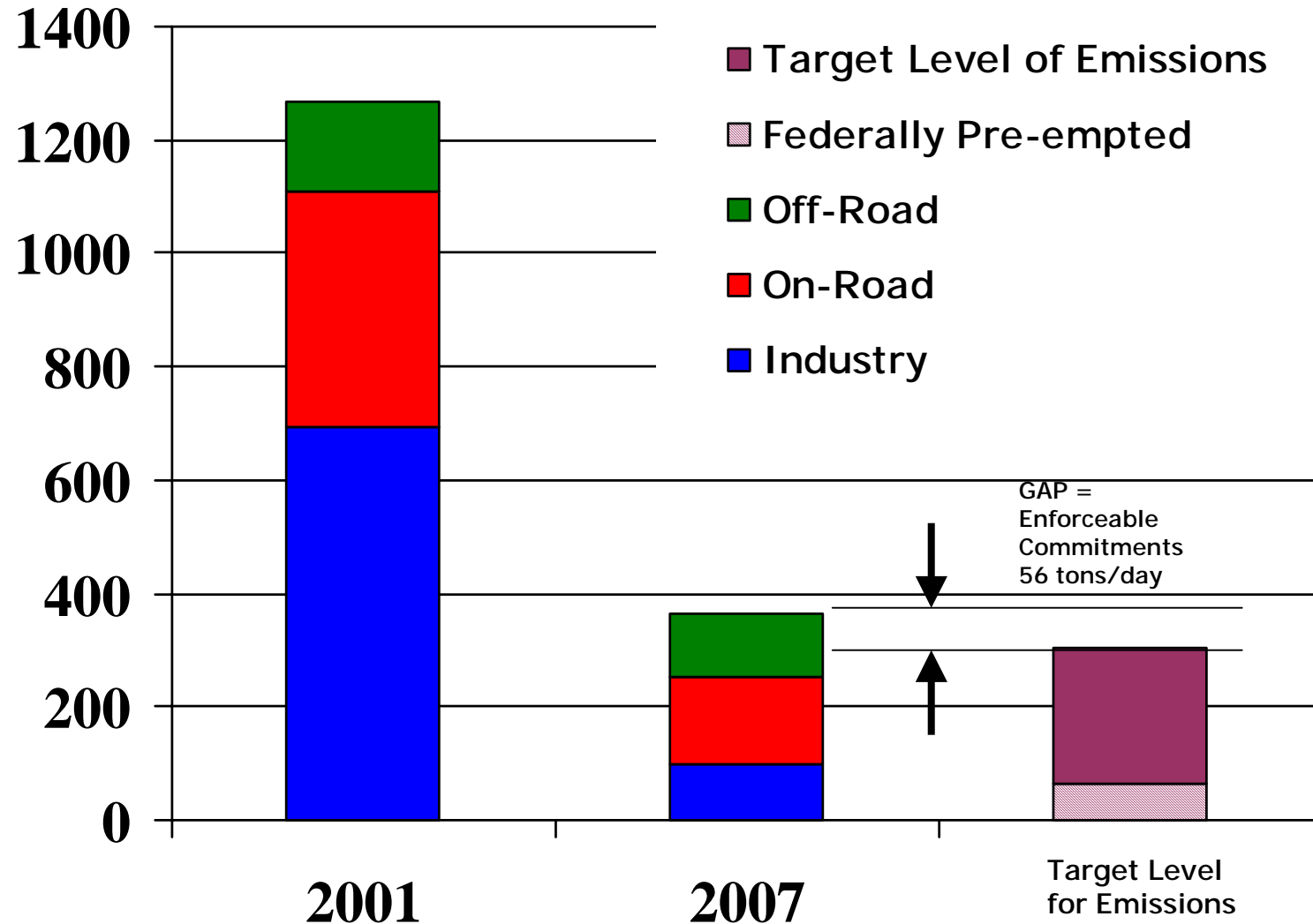
# AIR QUALITY CHALLENGES





**DFW/HG – Emissions Breakdown**

# The Houston Plan





**TNRCC**

# **EPA Region 6 & Texas Working for Energy Efficiency and NO<sub>x</sub> Reduction**

# Texas Emissions Reduction Plan (TERP)

- **Authorized in Senate Bill 5**
- A grant program to pay incremental costs of clean projects such as:
  - improving emissions from on-road and non-road vehicles through new purchases/leases, re-powers, and retrofits/add-ons;
  - infrastructure projects;
  - qualifying clean fuel projects;
  - new technology demonstration projects;

## TERP (cont'd)

- An incentive program available statewide for purchases and leases of cleaner new on-road heavy-duty diesel vehicles;
- A rebate program for new light-duty vehicles (Tier II bins 0 – 4);
- An energy efficiency program (local governments to reduce 5% per year beginning 2002);
- A new Texas Council on Environmental Technology (TCET) organized to assist in developing new technologies to address energy efficiency, air, water, and waste concerns.

## **SIP Innovation & TCET**

**TCET was established to identify and evaluate new technologies:**

- Retrofit, repower and add-on technologies
- Cleaner advanced fuels
- Stationary and mobile fuel cells
- Commercial and residential air conditioning ozone reduction systems
- Diesel inspection/maintenance programs
- Development and use of cleaner vehicles
- Energy Efficiency for NO<sub>x</sub> Reduction

## Other SIP Innovations

- **Senate Bill 7:**
  - Reduces electric growth demand by 10%  
(Texas Energy Efficiency Plan – Region/State working with EPA to develop model to provide NOx SIP Credits for Energy Efficiency measures)
  - State-wide NOx Cap and Trade system
  - Requires at least 2000 megawatts of new electrical generating capacity built in state by 2009 be from renewable sources (primarily wind power)

## Other SIP Innovations

- **VMT Reduction Strategies**
  - Telecommuting; Creating satellite offices; Traffic reduction strategies; Regional transit authorities; Taxi, rental car, and other transit vehicle clean vehicle requirements; Other “commuter choice” options
- **Strategies for emission reductions at airports**
  - Reduction of idling on runways: Plane takeoff policies to decrease congestion during busiest hours; Taxi, rental car, and other transit vehicle clean vehicle requirements
- **MOAs with Tug Boats, Trains, Ferries, and Airports**

# Energy Star Program



- **Energy Star Labeling Program**

- Outreach meetings w/ COGs, NGOs, business trade groups, & local governments
- Familiarize them with the program and advantages of selecting products



- **Energy Star Benchmarking of Buildings**

- Training sessions for public schools, grocery stores, and hospitals

# Energy Star Program



## Recent Success Story: Frisco, Texas

- First US City to adopt Energy Star as building standard
  - 30% more efficient than ICEE 2000
  - 4,000 housing starts per year
  - Region 6 to produce an informational video as an outreach tool
- 
- Frisco has initiated process to adopt a similar Commercial Code



# Texas Fuel Cell Initiative



- **House Bill 2845**, passed by the 77th Legislature, directs the State Energy Conservation Office (SECO) to develop a plan for the acceleration of the commercialization of fuel cells in Texas.
- The bill also calls on SECO to appoint an Advisory Committee to help with this task.
- The duty of the Fuel Cell Initiative Advisory Committee (FCIAC) is to help develop the plan as well as recommend to the legislature ways to ensure the viability of a fuel cell industry in Texas now and in the future.
- Report due by September 15, 2002.

# Texas & EPA Fuel Cell Projects:

## Port of Galveston



- Project to provide power to docked ships using Fuel Cells
- Offsets need for ships boilers to provide electricity
- Electricity to grid when not in use

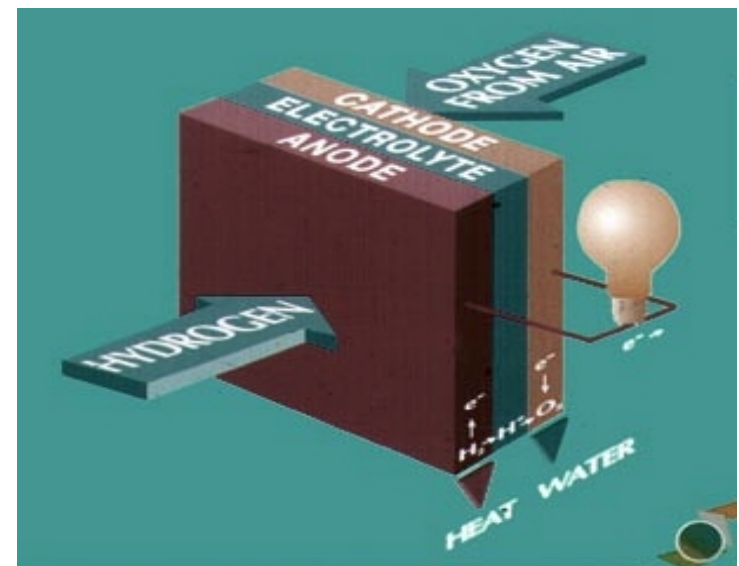
# Bush Intercontinental Airport



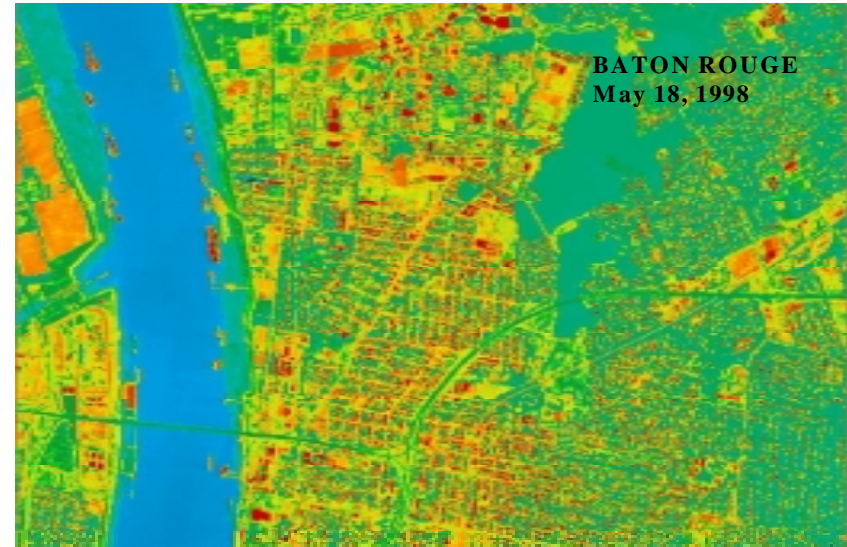
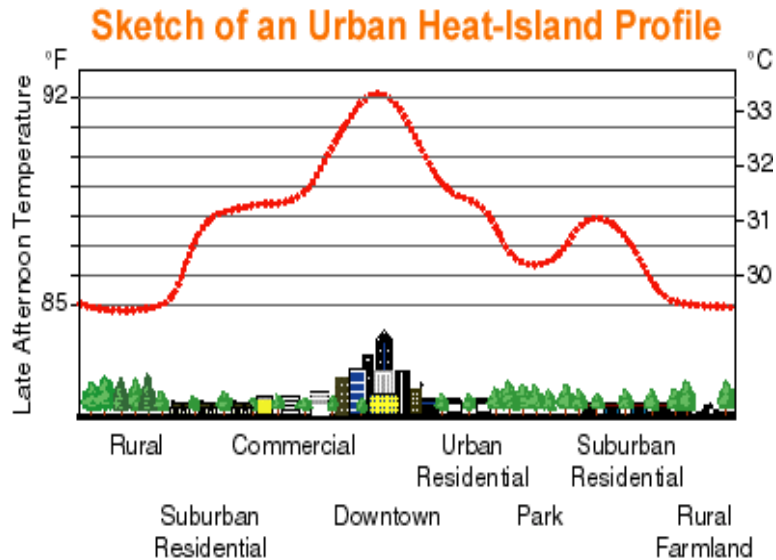
- Project to charge ground support equipment via a fuel cell
- Stakeholders include: Airport, Continental Airlines, American Airlines, FCE, & Reliant Energy

# Other Texas & EPA - Fuel Cell Projects

- Reduction Credit Trading Program for Fuel Cells to develop a methodology to enable fuel cells to generate emission reduction credits
- Project to identify companies that, using SEP funds, would:
  - Install fuel cells integral to their facility
  - Retire existing NOX sourcesProvides preliminary designs and cost estimates package



# Urban Heat Island



- EPA's Dallas Urban Temperature Limitation Initiative (DUTLI)
  - Enhancing energy efficiency in downtown buildings
  - Cool surfaces for buildings, enhancing vegetative cover & shading
- Pursuing Similar Effort in El Paso
- Air quality modeling being done at Lawrence Berkeley National Laboratory for Ozone Mitigation
  - Mitigation measures for Houston SIP as enforceable commitments
  - Joint with EPA, City of Houston, & NGOs

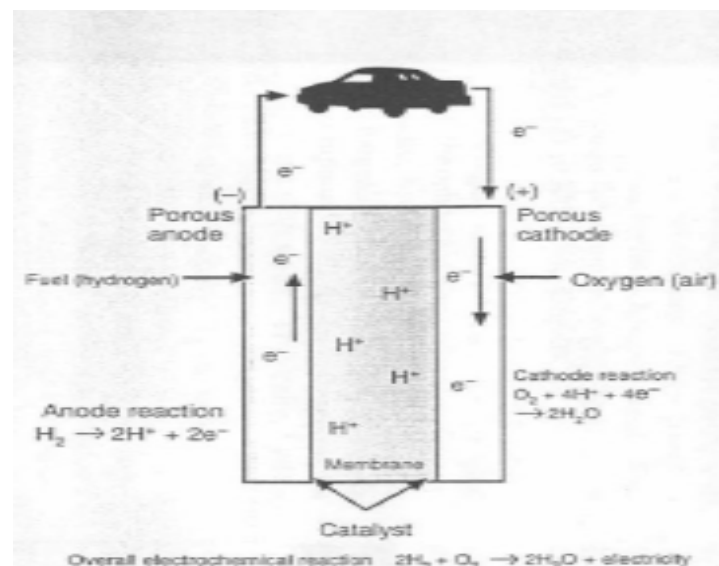
# Region 6 Program

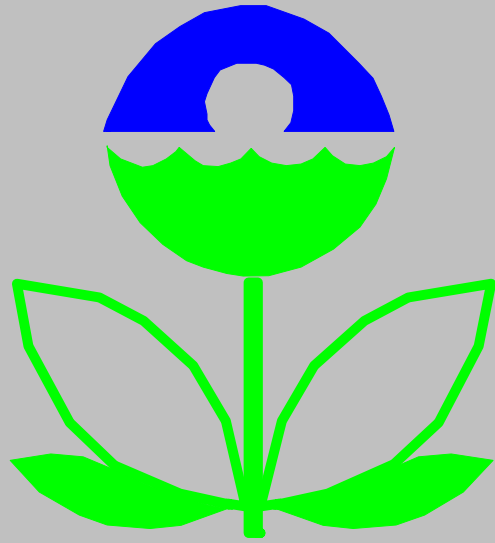


A cooperative partnership among EPA, state/local agencies, corporations and non profit organizations which will collaborate to replace older diesel buses with alternative fuel (natural gas , propane, etc.) and/or "clean diesel" buses for environmentally impacted, non-attainment area school districts.

# Fuel Cells in Transportation

- Transportation Sector is 95% Dependent on Petroleum
- Transportation Consumes 67% of the Petroleum Used in the U.S.
- Import > 50% of Petroleum Used
  - 10 Million Barrels of Foreign Oil per day
- **Freedom Car** – DOE Program to Develop Mass Production of Fuel Cell Vehicles
- Develop the Hydrogen-supply Infrastructure to Support the Vehicles
- EPA Promoting use of Fuel Cell Vehicles, working with DOE and making Presentations at Conferences, etc.





**THE END**